
CONSORTIUM FOR IT SOFTWARE QUALITY

# Software Quality Measurement

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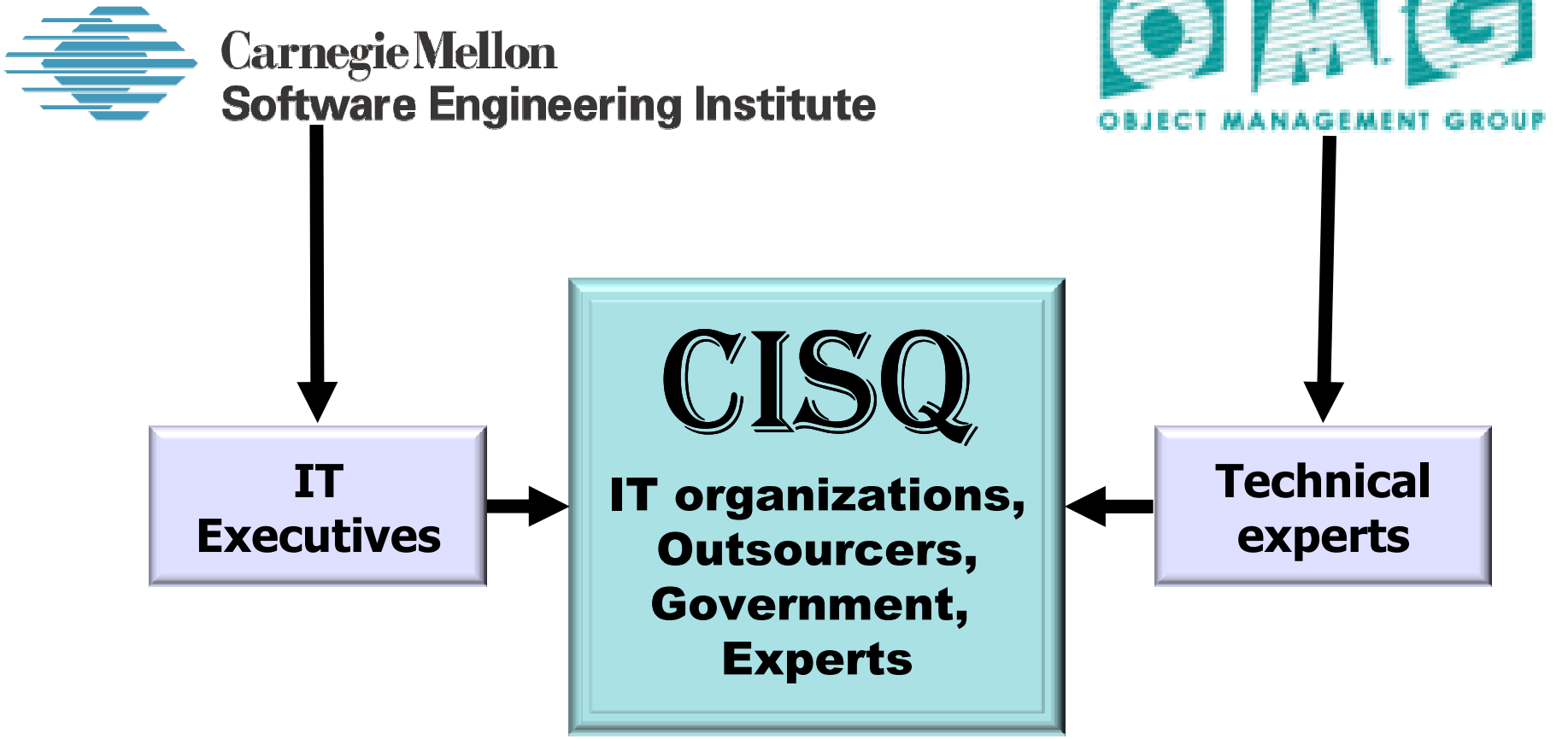
OMG
OBJECT MANAGEMENT GROUP

# THE ECOSYSTEM



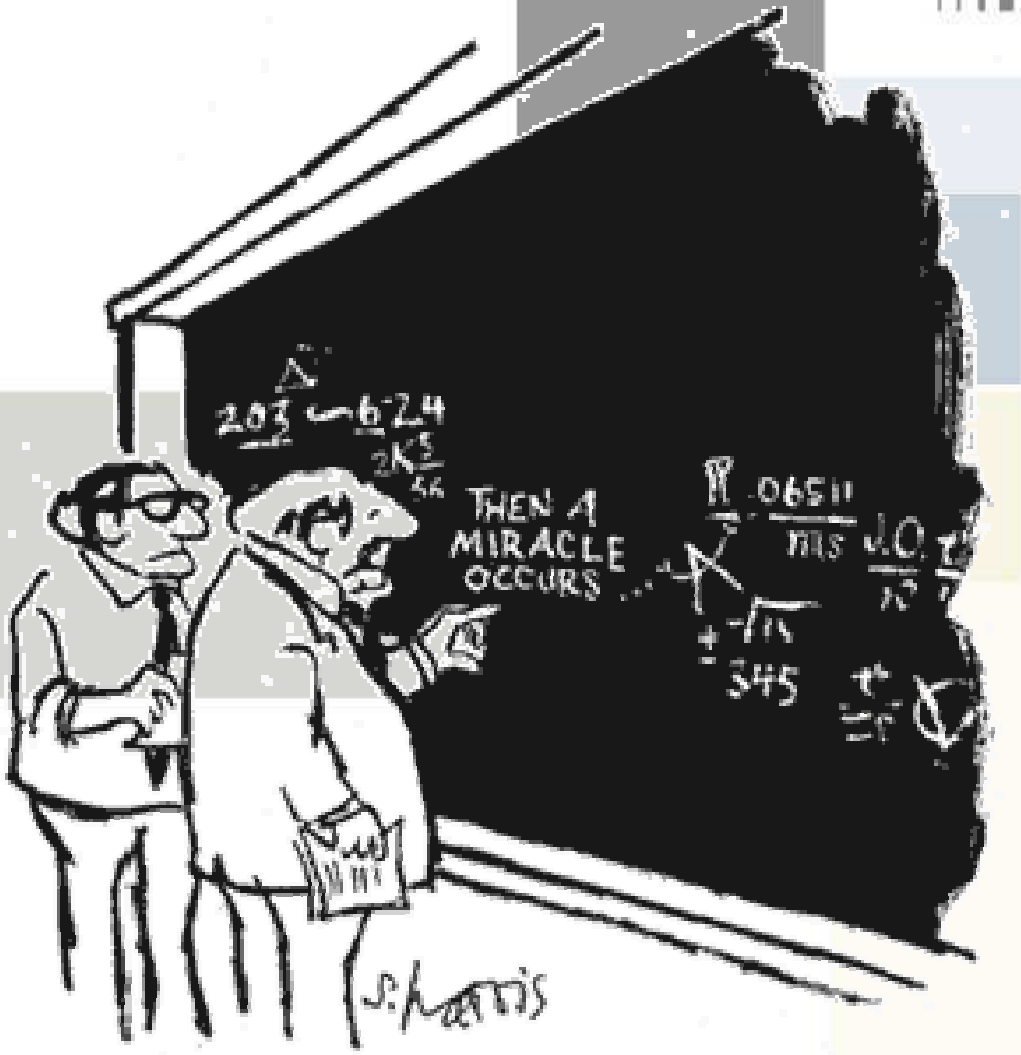

- Application quality metrics
- Method for automated measurement
- Technical certification

# OBJECTIVES

1. Raise international awareness of the critical challenge of IT software quality
2. Develop standard, automatable measures and anti-patterns for evaluating IT software quality
3. Promote global acceptance of the standard in acquiring IT software and services
4. Develop an infrastructure of authorized assessors and products using the standard

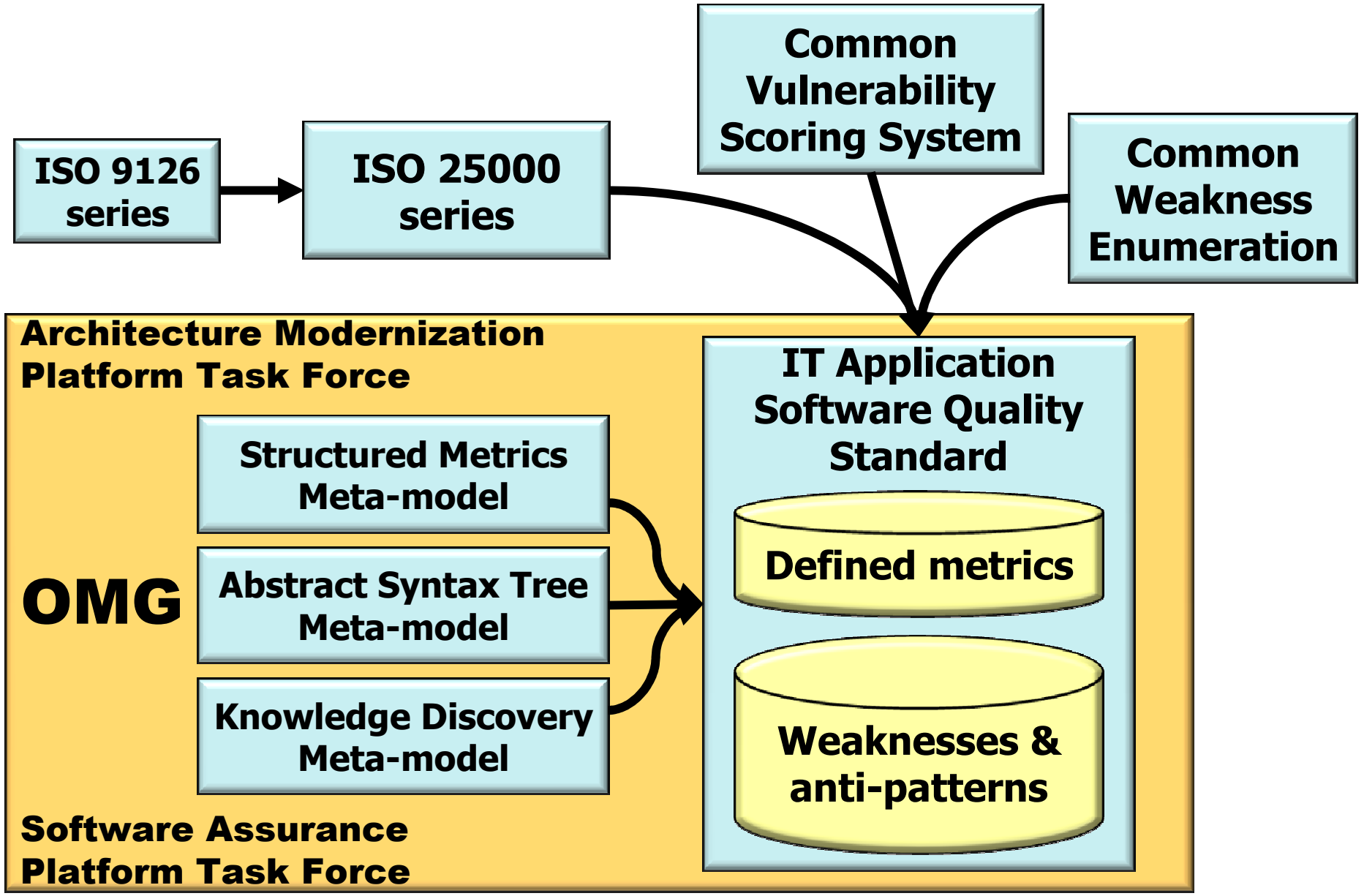
# PARTICIPANTS

| Frankfurt, Germany | Arlington, Virginia, USA |
|---|---|
| Amadeus | AXA |
| AXA | Benchmark Consulting |
| BNP Paribas | Booz Allen Hamilton |
| Capgemini | CAST |
| CAST | Capers Jones Consulting |
| CIGREF | David Consulting Group |
| Daimler | Dept. of Health & Human Services |
| Deutsche Bundesbank | Dept. of Homeland Security |
| DNV-ITGS | Fannie Mae |
| First Data | FedEx |
| France Telecom--Orange | General Motors |
| Fraunhofer IESE | IBM |
| Intellinova | McKesson |
| Itestra | Morgan Stanley |
| Johannes Kepler University | U.S. Air Force |
| Kugler Maag | University of Memphis |
| Siemens | Tata Consultancy Services |
| SIGS Datacom | |
| Société Générale | *This column includes organizations* |
| T-Systems | *whose delegates were delayed or* |
| Technical University Munich | *forced to cancel because of weather* |




"I THINK YOU SHOULD BE MORE EXPLICIT HERE IN STEP TWO."

# STANDARDS INFRASTRUCTURE



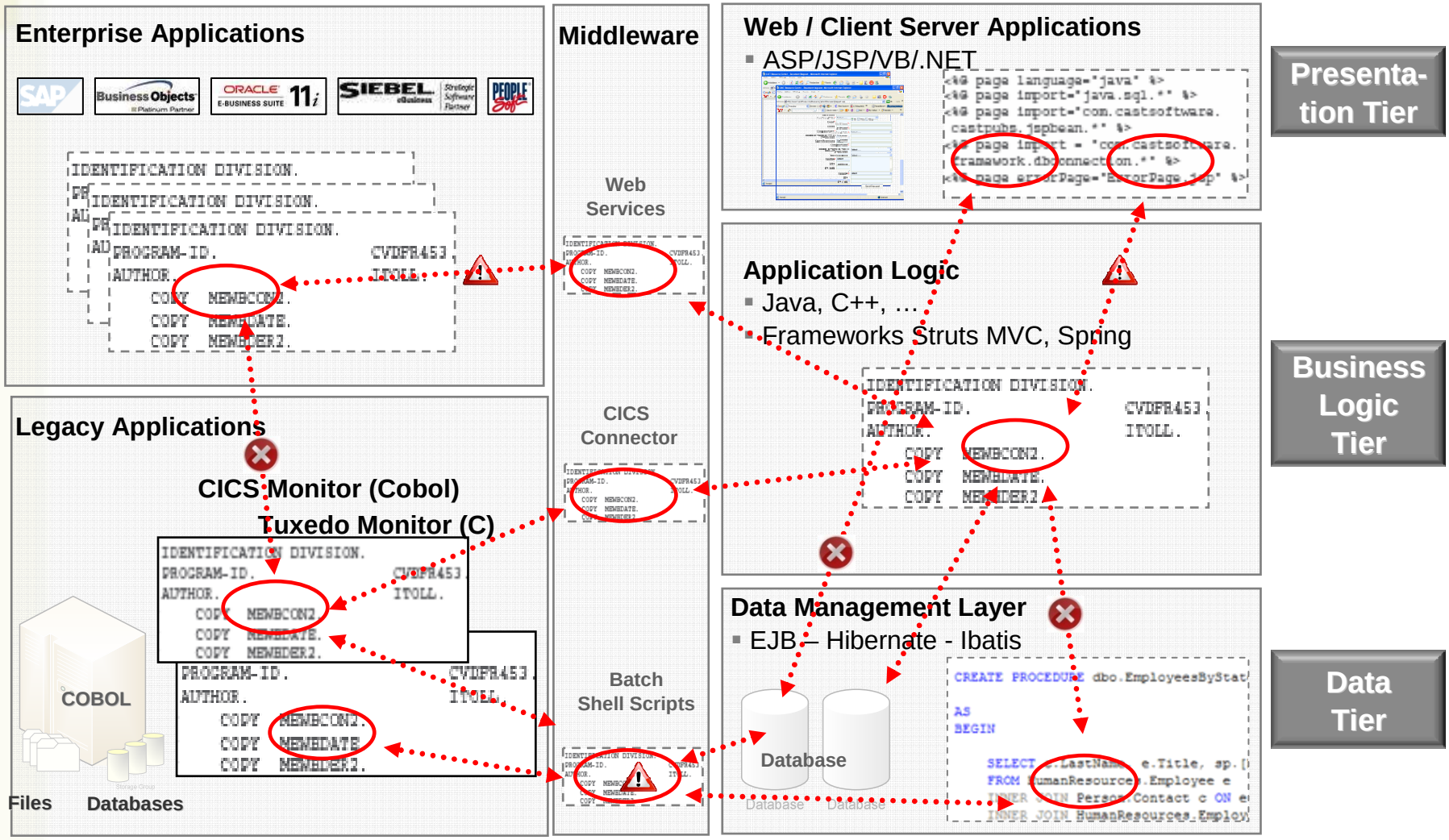
# Technical Working Groups

| | |
|---|---|
| Size | Develop a definition for automating Function Points |
| Maintainability | Measure elements affecting maintenance cost, effort, & time |
| Reliability & Performance | Measure elements affecting availability and responsiveness |
| Security | Measure elements affecting vulnerability to attack and loss |
| Best Practices for Metrics Use | Define methods for using code measures internally and externally |

# CERTIFICATIONS

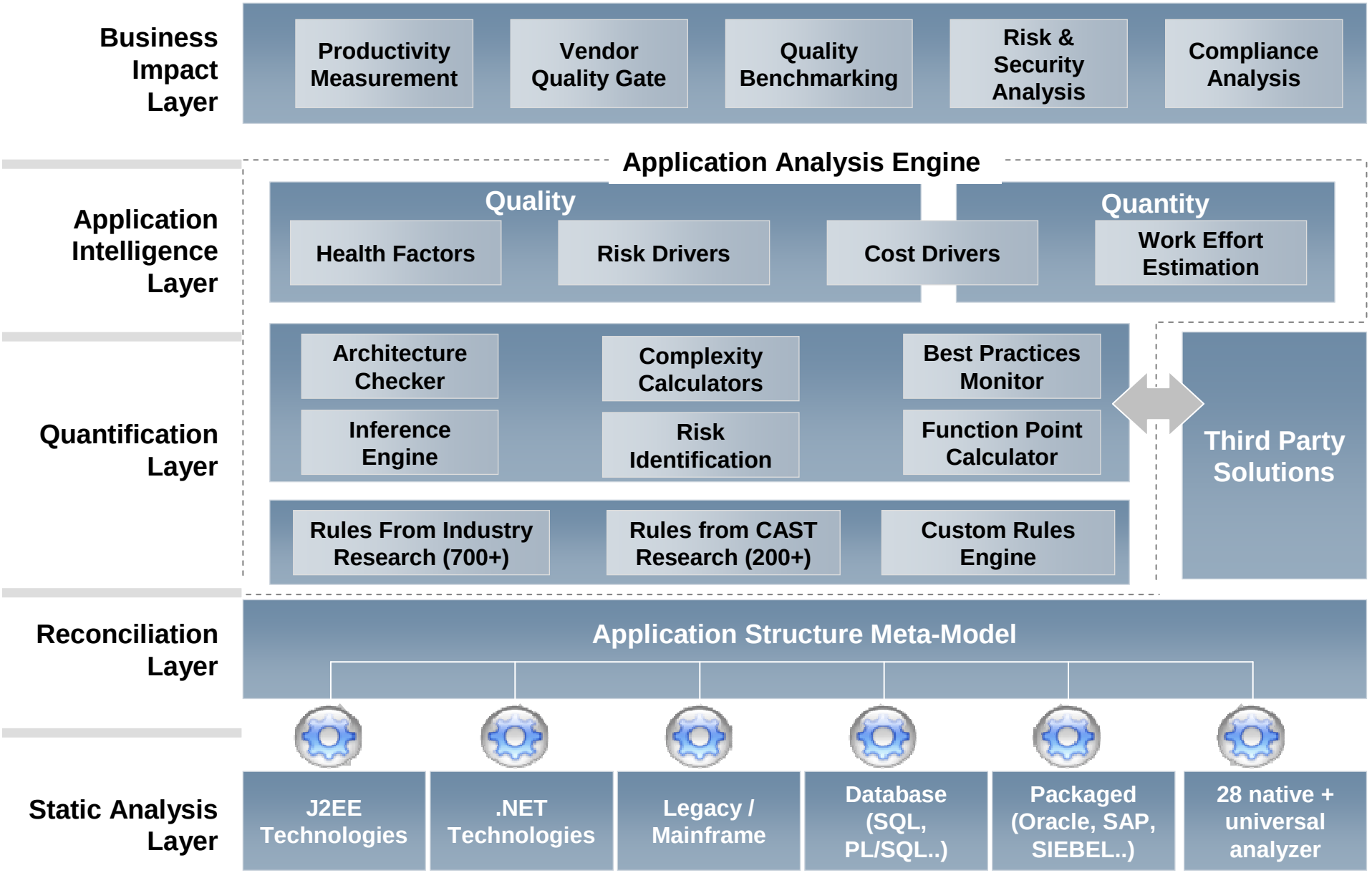
| | Purpose | Options |
|---|---|---|
| Developers | Certify that developers understand how to develop software possessing desirable quality attributes | OMG offers certifications for developers on many of their existing standards |
| Appraisers | Certify that appraisers are capable of using the standards effectively in providing professional diagnostic services | SEI has developed licensing services for appraisers in areas such as CMMI |
| Tools | Certify that tools which implement the defined measures and anti-patterns provide accurate results | Proven difficult in the past, but options will be explored |

# Software Quality is Contextual

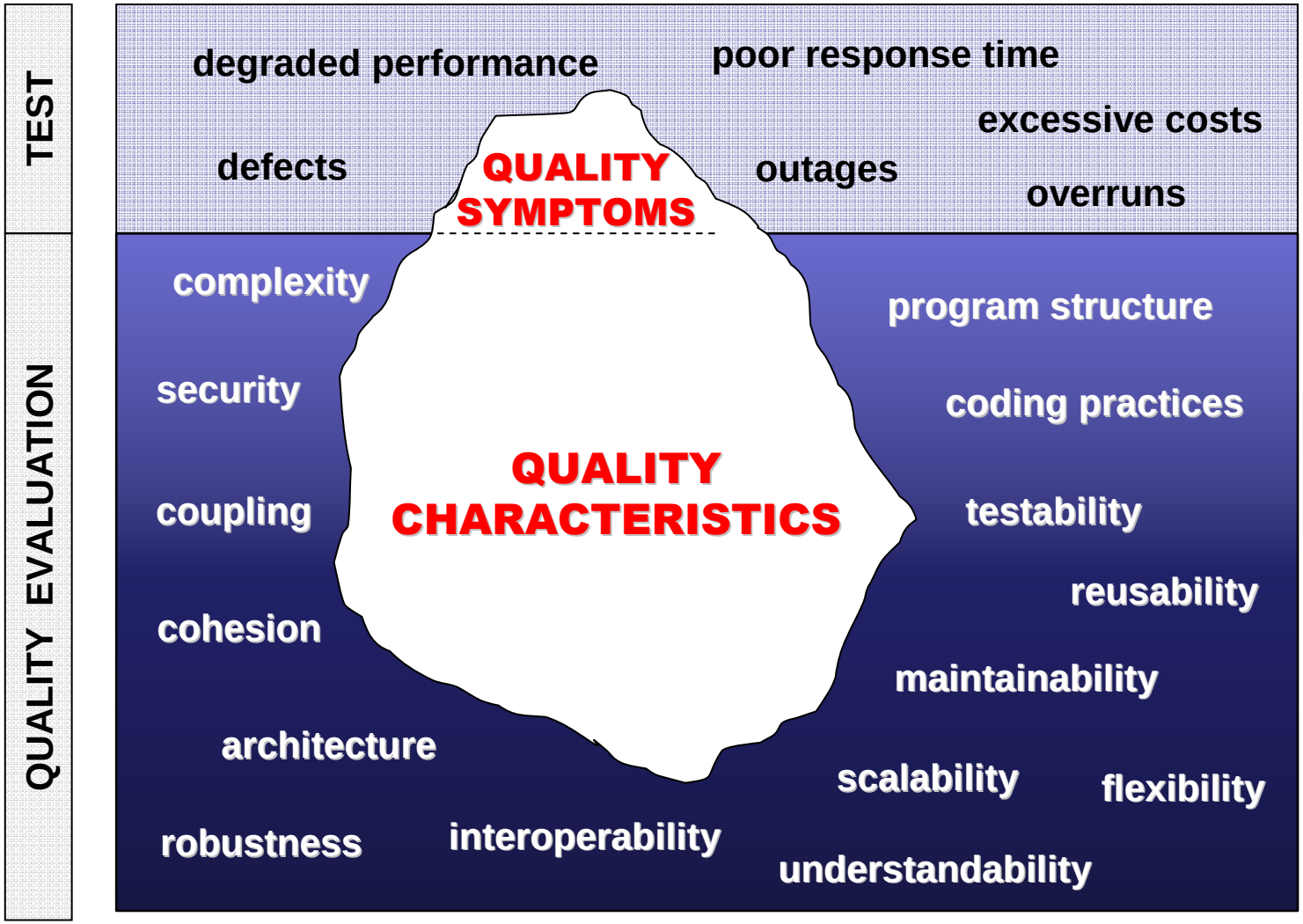



**Drivers of business disruption risk and cost thrive at the interface between technologies, beyond siloed skill sets and expertise**

# Software Quality is Structural



# Software Quality: From Symptom to Cause




Steve McConell (1993), *Code Complete.*

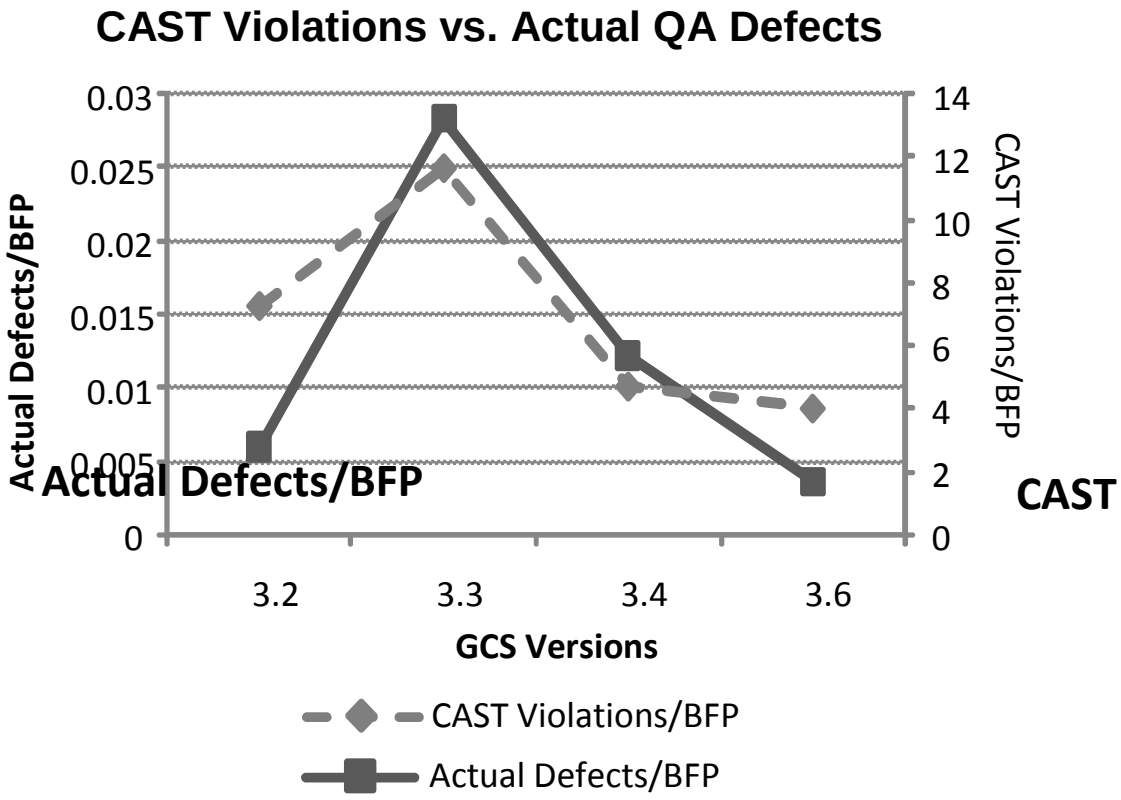
# CAST Application Quality Metrics

- **Business Risk Exposure**
  - *Performance*
  - *Security*
  - *Robustness*
- **Cost Efficiency**
  - *Transferability*
  - *Changeability*
  - *Maintainability (as defined by the SEI)*
- **Methodology Maturity**
  - *Architecture Compliance*
  - *Documentation Compliance*
  - *Standards Compliance*
- **Application Size**
  - *Size in KLOC*
  - *Size in Back-Fired Function Points*
  - *Size in CAST-Computed Function Points*
- **Application Complexity**
  - *Cyclomatic: Number of Objects of Low, Medium, High, and Very High Cyclomatic Complexity*
  - *CAST Complexity: Number of Objects of Low, Medium, High, and Very High CAST Complexity*
- **Structural Integrity**
  - *Number of Passed Checks*
  - *Number of Failed Checks*
  - *Number of Critical Violations*

# Reduced Development and Maintenance Costs

CUSTOMER EXAMPLE

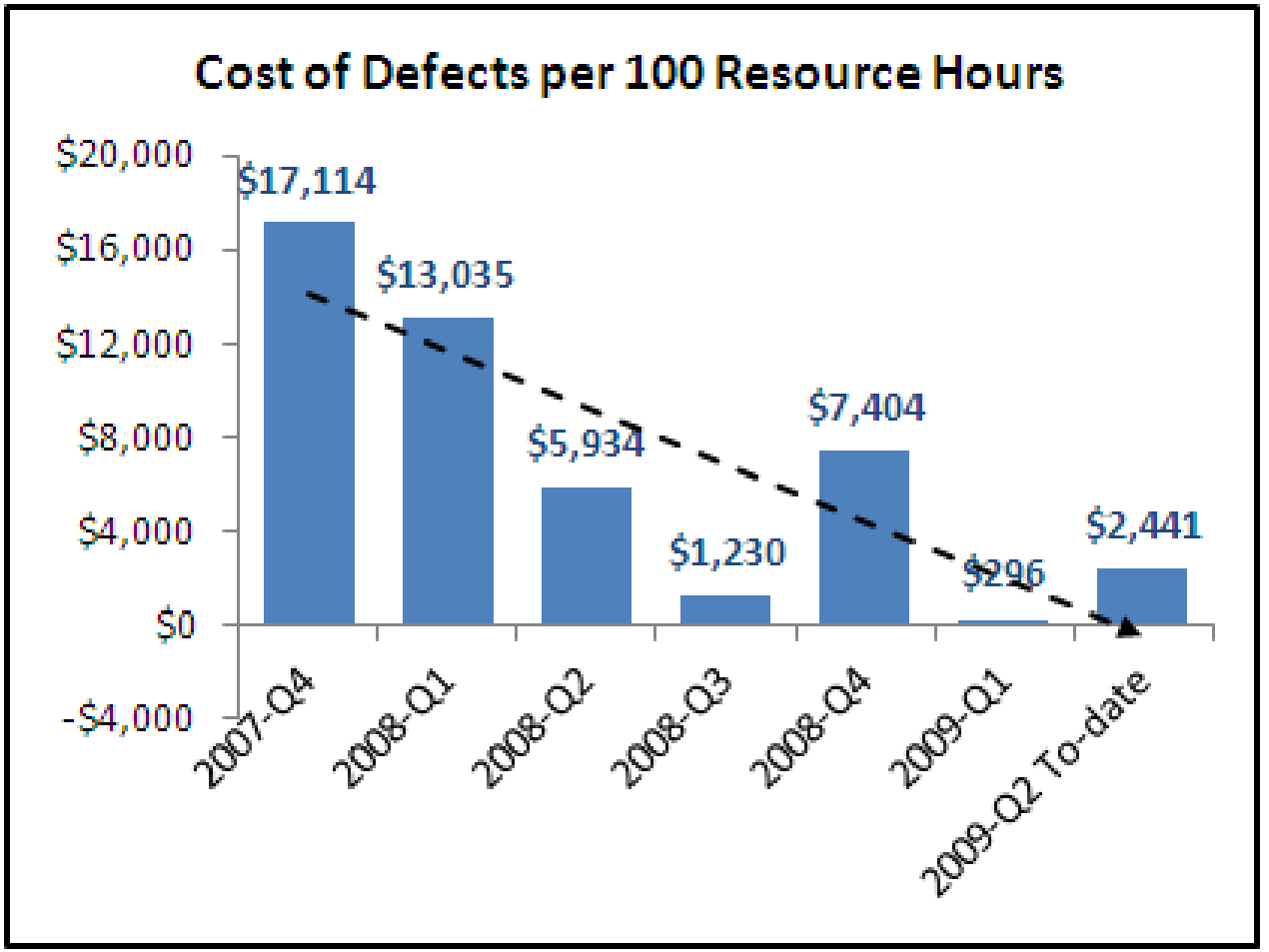
- **Industry:** Technology/Services
- **Application Analyzed:** Global, comprehensive tracking system of requests from the first receipt of the credit request to the final approval of the request by the appropriate parties.
- **Technologies:** J2EE, DB2



# ~10x Reduction in Cost of Fixing Defects

CUSTOMER EXAMPLE

- **Industry:** Financial Services
- **Applications:** 75 supported application/functions run by the Business Groups and Batch Operations
- **Very complex technology environment, grown over last 15 years (J2EE, .NET, COBOL, Oracle, DB2)**



# AppMarQ Benchmark and Prioritization

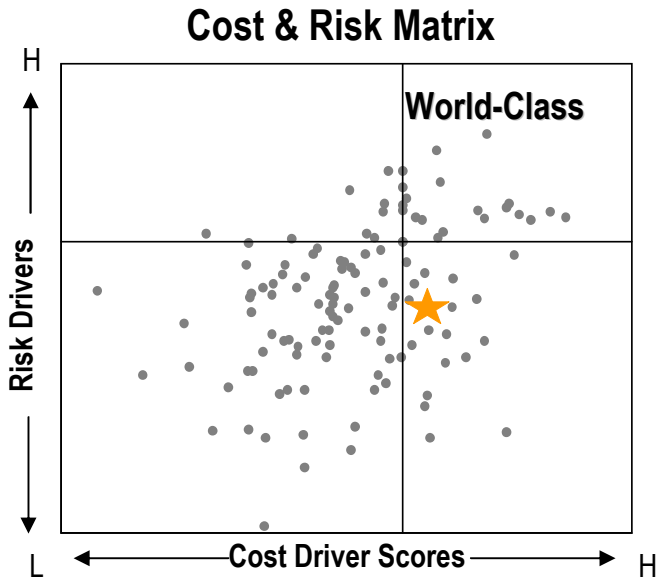
- **Maintenance Cost**
- **Development Cost**
- **Duration**
- **Customer Satisfaction**

**Risk Drivers**

- Robustness
- Performance
- Security

**Cost Drivers**

- Transferability
- Changeability
- CAST Complexity




- Driver is at or exceeds Median of World-Class
- Driver is between Median of Peer Group and World-Class
- Driver is below Peer Group Median

- Benchmark customer
- Other Companies

# 2010 AND BEYOND

- **CISQ will pursue member-driven objectives**
  - Determined by CISQ Executive Forum
  - Consensus among CISQ members of problem to be addressed
- **Early requests for additional objectives:**
  - Defect and failure-related definitions
  - Business value measures related to application quality
  - Productivity/Size measurement
- **Use of Executive Forum for addressing industry issues**
  - Outsourcing quality SLAs
  - Benchmarking
  - Regulatory compliance

“If you don’t know where you are, a map won’t help”

- Watts H. Humphrey